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2,314,992

STORM WINDOW

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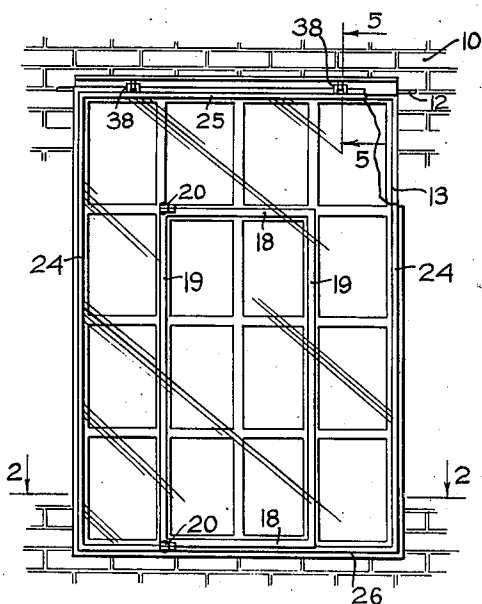


FIG. 1.

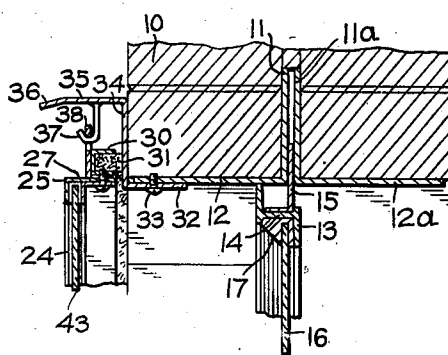


FIG. 5.

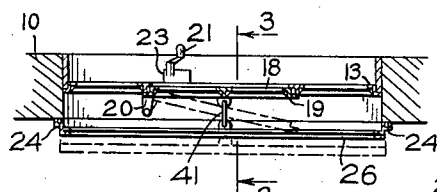


FIG. 2.

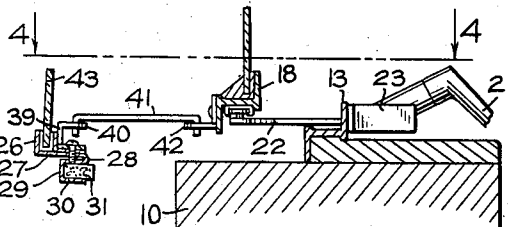


FIG. 3.

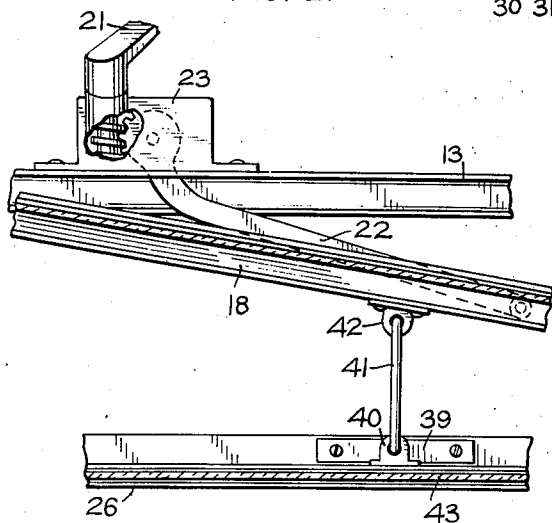


FIG. 4.

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STORM WINDOW

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3 Claims. (Cl. 189—64)

This invention relates to improvements in metal frame windows and has particular reference to an improved storm window construction.

The use of metal window frames and sash is increasing and is now the rule rather than the exception. Metal window frames and sash have certain advantages over wooden window frames and sash which has become quite widely recognized with the result that the use is increasing.

In cold climates it is frequently desirable to provide windows with storm window sash so as to secure better heat insulating properties, thereby reducing the expense of heating and rendering buildings so equipped more comfortable.

Windows employing metal frames and sash are practically all provided with one or more movable sections that open and close by a rotary movement about a vertical axis. When a window is provided with a storm sash, it is evident that in order to air the room and to secure the desired ventilation on warm days, it is not only necessary to open the window but the storm sash must also be opened in order that air may freely enter and leave the room.

Since the window sash in metal window constructions are hinged for movement about a vertical axis and since the storm sash is located in close proximity to the window, there is not room to open and close the storm sash in the manner in which this can be readily effected when the window sash is slidably mounted for vertical movement in the manner almost universally practiced in connection with wooden sash windows.

The sash of metal windows are opened and closed by means of a mechanism comprising a lever pivoted to the window frame and slidably connected with the sash, and this lever is controlled by means of a crank accessible from the inside of the room or building and connected with the lever by a suitable mechanism which is in common use and comprises a worm gear.

One of the objects of this invention is to produce a window of the metal sash type, having a movable sash mounted for oscillation about a vertical pivot and a storm window sash supported for movement about a horizontal pivot located above the window opening and to provide interconnecting means whereby the two sashes are opened and closed simultaneously by rotating the control handle.

Another object of the invention is to provide a window in which the storm sash is supported directly from the lintel of the window and entirely independently of the wall in which the window opening is positioned.

A still further object of the invention is to provide a window in which the upper end of the storm sash is protected against rain and snow

by an overhanging flange which covers the upper end of the storm sash.

The above and any other objects that may become apparent as this description proceeds are attained by means of a construction and an arrangement of parts that will now be described in detail and for this purpose reference will be had to the accompanying drawing in which the invention has been illustrated in its preferred form and in which:

Figure 1 is a side elevation of a portion of a wall showing the improved window in position in a window opening;

Figure 2 is a section taken on line 2—2, Figure 1 and shows by full lines the window and storm sash in closed position and by dotted lines the two sash in parallel open position;

Figure 3 is a vertical section to an enlarged scale, taken on line 3—3, Figures 2 and 4;

Figure 4 is a section taken on line 4—4 Figure 3; and

Figure 5 is a section taken on line 5—5, Figure 1, but to an enlarged scale.

In the drawing reference numeral 10 designates a brick wall provided with a window opening. The brick wall illustrated in the drawing is an eight-inch wall formed from two parallel slightly spaced tiers of brick. The window opening is provided with a lintel comprising an angle iron having a vertical flange 11 that projects upwardly between the inner and outer layers of brick and a substantially horizontal flange 12 that extends outwardly and forms a support for the wall. In the construction illustrated, the inner tier of brick is also supported by an angle iron similar to that employed for the outer tier and whose vertical and horizontal flanges have been respectively designated by reference characters 11a and 12a. The window frame is formed from a steel Z bar 13 of a usual and well known construction. The web 14 is provided with an upwardly extending fin 15 that projects into the space between the vertical flanges 11 and 11a and serves to position the window frame and to form a weather seal. The glass 16 is secured in position in the usual way by putty 17 or by any other common expedient. In the embodiment illustrated, the window frame is provided with a hinged section having a sash whose upper and lower frame members have been designated by reference numeral 18 and whose vertical frame members have been designated by reference numerals 19. This sash is connected with the surrounding window sash by two hinges 20, about which it may swing outwardly for the purpose of ventilation. The window sash is opened and closed by means of the usual mechanism which comprises a handle 21, a pivoted lever 22 and a worm gear motion transmitting mechanism positioned in the housing 23. The construction of the window sash operating mechanism has not

been illustrated because it is of a usual well known construction fully illustrated in United States Letters Patent No. 2,050,403.

The storm sash comprises a frame having two vertical side members 24 an upper frame member 25 and a lower frame member 26 forming a rectangle. The storm sash frame is preferably formed from sheet metal of the cross section shown in Figure 3 in which the vertically extending flange with which the lead line from reference numeral 26 contacts, is a continuation of the horizontal portion 27 that is reversely bent at 28 and extends downwardly to form the bottom 29 of a channel whose lower side has been designated by reference numeral 30. A felt sealing strip 31 is positioned in the channel and extends outwardly so as to engage the outer surface of the wall 10 when the storm sash is in closed position. The exact shape of the structural steel member forming the frame of the storm sash is immaterial, so far as this invention is concerned, and will therefore not be described with any greater detail. In order to support the storm sash in such a way that it will be independent of the brick wall, means has been provided for securing it to the under surface of flange 12 of the angle iron lintel. The supporting means for the storm sash consists of a Z bar whose lower flange 32 is positioned beneath the flange 12 and secured to the latter by means of bolts or other suitable means like that designated by reference numeral 33. The web 34 extends upwardly along the outer surface of the wall and terminates in the outwardly projecting flange 35. The outer edge of the latter may be bent so as to incline downwardly as indicated at 36. A plurality of hooks 37 are secured to the Z bar and positioned beneath the flange 35. In Figure 5, these hooks have been illustrated as extending from the lower surface of flange 35, but may be connected directly with the web 34, if desired. The upper frame member 25 of the storm sash is provided with upwardly extending perforated lugs 38, having openings which receive the hooks 37. The storm sash is freely pivotable about its point of support with the hooks 37 in a manner quite evident from the drawing. The lower frame member 26 of the storm sash is provided near its central point with a U-shaped attaching clip 39 whose upper arm 40 is perforated for the reception of the hooked end of a connecting rod 41. The lower frame member 13 of the window sash is provided with an L-shaped connector whose outwardly extending portion 42 has an opening for the reception of the inner downwardly extending end of the connecting rod 41. When the window sash is moved about its hinges 20, it will impart a simultaneous and corresponding movement to the storm sash. As above explained, the window sash is operated by the usual form of window operator which has been indicated in Figure 2. The length of the connecting rod 41 is such that when the window sash is in closed position, the storm sash will be held against the outer surface of the wall with sufficient force to compress the felt sealing strip 31 to such an extent that it will adapt itself to the irregularities of the wall surface and form an effective seal. The storm window is usually formed from a single piece of plate glass which has been designated by reference numeral 43, but it may be divided into several sections if found desirable.

Referring now to Figure 5, it will be seen that the distance from the hinge connection (37, 38) 75

to the upper horizontal frame member (25, 20, 31) is such with relation to the width of the web 34, that the weatherstrip 31 and also that part of the upper horizontal frame are positioned above the lower edge of the web 34 when the storm window is closed. This relationship produces a good seal at the top when the storm window is in closed position.

From the above description it will be apparent that the storm window sash is supported from the angle iron lintel and not from the wall itself and therefore is always held rigidly and in a predetermined position. Besides this, the Z bar storm sash support can be quickly secured in position. The storm sash can readily be disconnected by a slight upward movement which simplifies the operation of removal for storage purposes. With the construction shown, the storm sash will automatically open and close in response to the corresponding movements of the window sash. This interconnection makes it unnecessary to manually open and close the storm sash and assures that it is always in closed position when the window sash is closed.

Particular attention is directed to the window construction illustrated more particularly in Figure 5, because this simplifies the installation of such windows and assures a predetermined and permanent adjustment.

Having described the invention what is claimed as new is:

1. A window frame provided with a storm sash, an angle iron lintel having one flange extending upwardly adjacent the middle of the wall, the other flange extending outwardly in a substantially horizontal plane, and a Z bar having one flange bolted to the under side of the lintel angle and its web projecting upwardly along the front surface of the wall, the upper flange projecting forwardly from the wall.

2. A window having an angle iron lintel having one flange extending upwardly adjacent the middle of the wall, the other flange extending outwardly in a substantially horizontal plane, a Z bar having one flange bolted to the under side of the lintel angle and its web projecting upwardly along the front surface of the wall, the upper flange projecting forwardly from a wall, means for hingedly connecting a storm sash with the Z bar, said means comprising hinge members projecting from the Z bar and positioned at points intermediate the flanges.

3. A metal window comprising, in combination, a window frame for insertion into a window opening in a wall, a window sash connected with the frame for movement about a vertical pivot, an angle bar lintel for the window opening, one flange extending upwardly into the wall, a fin projecting upwardly from the top member of the window frame and positioned adjacent the upwardly extending flange, a Z bar having its lower flange secured to the horizontal flange of the lintel, its web extending upwardly along the outer surface of the wall, the upper flange projecting outwardly from the wall, and a storm sash pivotally connected with the Z bar below the outwardly extending flange, the distance from the pivotal connection to the upper transverse frame member of the storm sash being less than the distance to lower flange of the Z bar whereby the said frame member will overlap the web of the Z bar when the storm sash is in closed position.

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